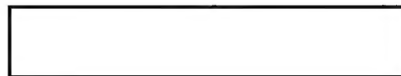


PROGRESS REPORT NO. 1

COLOR IMAGE ASSESSMENT

PROJECT 6619

by



STATINTL

Period: November 1 through November 30, 1968

Declass Review by NIMA/DOD

Progress Report No. 1  
Project 6619

PROGRESS DURING THE PERIOD

During the month of November work was initiated in the field of color image assessment. The personnel assigned to the contract are: [ ] program manager, [ ] photographic scientist, and [ ] programmer.

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The following computer programs are available from a previous project:

1. Direction Cosine
2. Ensemble Averaging
3. Color Exposure Table Generator
4. Characteristic Vector
5. [ ] Data Reader
6. Raw Exposure Generator

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A review of the status of the various subtasks as of the date of termination of the previous contract was performed. During the previous period, a visit by [ ] was made to the customer's facility to establish working procedures, materials needed to be traced, and the extent of program documentation that will be necessary. Delivered at this time were three sets of cyan, magenta and yellow micro-step wedges exposed on emulsion types S.O. 151 (2448), 8443 and S.O. 121. The wedge set on type S.O. 151 material replaces the corresponding set delivered under the previous contract as the selective exposure separation of the dye layers on the newer set are more complete.

A decision was made at this meeting to limit the present investigation to film types S.O. 151, 8443, and S.O. 121, as these emulsions represent the bulk of original material presently encountered. Problems associated with S.O. 118 or similar duplication materials

will not be considered under this contract because of the additional problems due to the multigeneration process.

Trace instructions were established for the analytical cyan, magenta and yellow micro-step wedges on S.O. 151, S.O. 155, S.O. 121, 8442, and 8443 materials. Desaturated integral micro-step wedges are also to be traced on film type 151 and desaturated wedges will be delivered in December on S.O. 121 and 8443 materials for tracing. These desaturated wedges permit the determination of the characteristic vectors for the automatic exposure table generation routine. The analytical micro-step wedges are used in determination of the integral to analytical micro density mapping matrix.

The customer was informed that the mathematics for the T and F distribution functions could be used in initiating the programming effort at his facility. The complete mathematical expression for calculating alpha risk values from these two distributions are contained in Appendix B of the final report, Advanced Color Image Assessment Concepts, FR-68-6, [REDACTED] (July 1968). STATINTL

STATINTL On 22 November 1968 Fortran subroutines ALPHAT and ALPHAF were sent from [REDACTED] to the customer to aid his programming efforts. Also included were examples of input to and output from these two subroutines. Five additional copies of the final report were mailed at this time.

A Fortran listing of the color exposure table generator program was mailed to the customer on 27 November 1968. This program uses the standard third order polynomial fit to a given characteristic curve followed by an inversion routine to form an exposure table. The color version of this program first performs an integral to analytical density conversion using an input mapping matrix, and is designed to work with the dynamic transfer function of a positive material over an expanded density range of .01 to 4.00. The program was mailed with written documentation, flow charts, a Fortran program listing of the main program, all associated subroutines (TWOCUR and INVERT), sample input data, and sample output.

Work is presently being performed on finalizing the characteristic vectors and ensemble averaging program.

A new program has been generated that performs a regression fit on a sample of scalar multiples derived from an array of color exposure tables and the associated characteristic vectors. This fit is made to the generating cyan, magenta and yellow density values. Work has been started on the mathematical analysis required for selecting or automatically generating new color exposure tables based on shifts in the dominant wavelength or purity of the object color being scanned by the microdensitometer.

No operational problems are seen at the present time.

WORK PLANNED FOR NEXT PERIOD

The primary emphasis during the next reporting period will be on solving the exposure table generation problem, since correct exposure table generation is necessary for the determination of correct modulation transfer function for color materials. Also, if scanned data becomes available, this data will be analyzed and some operational exposure tables will be generated.

**memo**

STATINTL

Was

I'm sending you three  
in addition to the formal  
submission through [redacted]

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STATINTL

JOHN:

Perhaps

could give you the receipt #'s  
for the two mailings  
mentioned in the attached.

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